City of Cape Town

Water Services Development Plan

Review of the WSDP
2002/03 – 2003/04

October 2004

CITY OF CAPE TOWN | ISIXEKO SASEKAPA | STAD KAAPSTAD

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I STRATEGIC OVERVIEW

1. Executive Summary

Satisfactory progress has been made in the implementation of the WSDP 2002 given the numerous institutional, human and financial constraints that have prevailed in the period under review. Numerous accomplishments were achieved in the review period, some of which achieved national acclaim. These included: successful implementation of free basic water and sanitation for the major portion of the population, the establishment of a customer/citizen charter, the implementation of the SAP system, participation in the establishment of a Corporate Call Centre, the establishment of an Asset Care and Technical Operations Centres, the improvement in treated effluent despite capital constraints, the land application of de-watered wastewater sludge, the Nationally acclaimed Khayelitsha Pressure Management Project, the roll out of emergency services of water and sanitation to all informal areas, the accreditation in terms of ISO 9001:2000 of the Bulk Water Department, the signing of the raw water supply agreement with DWAF, the commencement of the Berg River Project, the commencement of the TMG Aquifer investigation, the introduction of Asset Financing Funds in Water Services and the treated effluent recycling investigation.

There were, however, several primary shortcomings, including the lack of progress in institutional reform, the sub-optimal budgetary allocations towards infrastructure development and replacement and the increase in debt. A significant shift towards a long term view is required in the managing, operating and financing of Water Services if it is to be financially viable and sustainable together with affordable tariffs. The financial and economic modelling of the service is a tool that will assist decision makers in finalising the WSDP 2005. The new WSDP 2005 will examine various future scenarios from which critical decisions will have to be taken and a considered commitment made to the 5-year capital and operating plans and tariffs.

Key performance indicators were updated, but confidence in some of the figures is not as high as it should be, due to the previous lack of integrated maintenance management and the new ERP/SAP from which a full record is not available for the years under review. The confidence level in these indicators promises to be much improved with the next review of the WSDP.

2. Introduction

This strategic overview examines the achievements and challenges in the past two years but also focuses on the key constraints that need to be overcome to ensure a sustainable water and sanitation service with long term affordable tariffs.

The City of Cape Town faces significant challenges to transform water services into a leading water services provider, which is citizen friendly, efficient, affordable and sustainable. These challenges include the separation of the Water Services Authority and the Water Services Provider, the formation of a single operational entity, area co-ordination with other services, the provision of adequate services to informal settlements, more effective and integrated long term infrastructure and financial planning, the undertaking of a comprehensive capital investment programme, and the improvement of operational efficiencies, customer relations, revenue management, the management of assets and reducing costs.

The new WSDP 2005 will examine various future scenarios from which critical decisions will have to be taken. The financial and economic modelling of the service is a tool that will assist decision makers in finalising the WSDP 2005. The scenarios will include “needs based”- capital and operating plans compared with plans based on the MTIEF council allocation. Somewhere between the two extremes it is envisaged to establish sustainable capital and operating plans and tariffs. Council will be required to make key policy decisions around the reduction and/or delay in key programmes and the risks associated with those adjustments.

In essence the decision with respect to the new WSDP 2005 comes down to the commitment to 5 year tariffs. These tariffs must ensure that the water and sanitation service is sustainable in the long term as it is the projected revenue stream that determines the 5 year operating and capital plans. As the financial aspect is the key driver to the WSDP a large portion of this overview is dedicated to this.

3. Achievements

In the last 2 years significant progress has been made in implementing the WSDP 2002. Numerous accomplishments were achieved in the review period, some of which achieved national acclaim. These included: successful implementation of free basic water and sanitation for the major portion of the population, the establishment of a customer/citizen charter, the implementation of the SAP system, participation in the establishment of a Corporate Call Centre, the establishment of an Asset Care and Technical Operations Centres, the improvement in treated effluent despite capital constraints, the land application of de-watered wastewater sludge, the Nationally acclaimed Khayelitsha Pressure Management Project, the roll out of emergency services of water and sanitation to all informal areas, the accreditation in terms of ISO 9001:2000 of the Bulk Water Department, the signing of the raw water supply agreement with DWAF, the commencement of the Berg River Project, the commencement of the TMG Aquifer investigation, the introduction of Asset Financing Funds in Water Services and the treated effluent recycling investigation.

Water demand is currently 17-18% below the unconstrained projected demand due in part to the Water Demand Management Strategy (Khayelitsha Pressure Management being a significant achievement) but also as a result of customers reducing their demand during and after the previous restrictions.

4. Constraints and Challenges

Significant issues have retarded progress in transforming Water Services into a leading water services provider. Delays have been experienced in the organization design and placement process with the latest organizational design proposals reversing the decision to form a ring-fenced business unit. The last two years have seen significant cuts in the operational and capital budgets, which challenge the sustainability of the service and may have a detrimental effect on the long-term tariffs. The capital cuts have resulted in halting of development in growth areas of the city due to the lack of wastewater infrastructure capacity. The Water Demand Management Programme requires significant funding which has also been severely cut back. No progress has been made on Infiltration Management and the setting up of an Information Bureau due to staff constraints.

The implementation of the SAP system has its challenges. Producing a realistic Income Statement and Balance Sheet, ensuring that the necessary data is captured so that statistic can be produced, validation of monthly meter readings, and reporting on, for example, unaccounted for water (UAW) remains a challenge.

At present support services (such as finance, billing, information technology and human resources) are rendered by other departments in the city administration. Although ring-fencing would imply that all of these support services should be housed within the ring-fenced unit, this need not be the case. Discussions were held with the “corporate centre” and “shared services centre” as to the best arrangements for the city as a whole for the allocation of these support functions. Various groups are supposed to meet on a regular basis to monitor performance and take corrective action. The Organization Design and placement delays have also retarded this process. An area delivery model is being developed for the city as a whole. Should the ring fenced unit concept be reinstituted, the relationship with the area management model would have to be developed.

5. Financial Aspects

a. Financial Planning in the context of uncertainty

Detailed financial modeling was undertaken in 2001/2 to ascertain the implications of the capital and operating plans and the viability of the service. As mentioned the intention is to update this model for the WSDP 2005. It is important to understand that any financing forecasts in the present context are subject to significant levels of uncertainty for the following reasons:

- There is considerable uncertainty around a number of aspects of the Income Statement and Balance Sheet for both years under review.
- Many of the broad issues related to reform still need to be defined and strategies chosen. Key uncertainties relate to the future of the ring-fenced entity, support services and the management of the customer interface, including meter management, revenue collection and debt management.
- The possible increases in tariffs due to an accelerated implementation of water demand management.

b. Investment requirements

The capital expenditure needs are in excess of R4 billion over the next 10 years (average of R400 mil per annum) which is likely to require significant increases in tariffs in real terms in order to ensure the financial viability and sustainability of the service. The following strategic issues have been identified:

- All existing formal houses have adequate water and sanitation services but the planned provision of formal houses is inadequate to reduce the housing backlog.
- While the informal settlements have been provided with emergency water and sanitation services, the provision of basic services to households living in informal housing requires significant expenditure. The actual investment requirement is subject to change due to the dynamic nature of informal settlements – with changes in location and anticipated growth in informal settlements due to the housing backlog.
- A realistic programme for the renewal of existing assets needs to be investigated and developed. The replacement of aging reticulation infrastructure is the major driver of this component. There is considerable lack of data on the subsurface infrastructure condition. Performance monitoring and condition assessments such as CCT camera inspections are critical to improving the understanding of the remaining useful life of assets.
- The Bulk Water capital expenditure estimates are subject to revised modeling and risk assessment of postponing the construction of the new 500 Ml per day treatment plant.
- The wastewater treatment and wastewater reticulation capital expenditure estimates will be affected by the finalization and integration of the master plans which is currently in progress. Issues to be addressed are the impact of the DWAF 2010 standards, storm-water ingress, improving growth estimates of wastewater flow, the impact of WDM on wastewater flows and the impact of recycled effluent.

c. Financing of the investment programme

In 2002 the average cost of existing capital debt was estimated to be 15.5% per annum, which was high relative to the current market interest rates (one could expect the cost of borrowing for a well run and financially-viable metropolitan water utility to be in the region of prime to prime less 2%).

Should the ring-fencing of the water service operations be given the green light, it creates an opportunity for the business to develop a new financing strategy. This strategy should comprise the following: raising loans from banks at competitive interest rates, consideration of the placement of bonds for the raising of finance and consideration of private financing arrangements through, for example, build-operate-transfer contracts for lumpy investments such as new wastewater treatment plants. The Municipal Infrastructure Investment Unit (MIIU) has been approached to assist in these investigations.

d. Tariff and Financial implications of the investment programme

Based on the previous financial analysis, which had similar capital and operating requirements, it is anticipated that tariffs will need to increase in real terms over a number of years. It is not possible to say by how much until many of the significant uncertainties identified above have been resolved.

Based on the 2002 affordability analysis; household affordability is constrained, there are limits to the extent to which cross-subsidies are sustainable, and it is not possible to increase tariffs significantly without addressing the issue of affordability, indigent policy and subsidies (including the equitable share) in a more systematic and considered manner.

e. Improving customer and revenue management

In June 2002 water customer debt was about R460 million, representing 8 months of sales. The combined water and sanitation debt is now R1142 million, representing 10 months of sales. Revenue collection needs to be improved and non-payment reduced. The following strategies have been identified: more effective implementation of the debt management policy, more effective implementation of the indigent policy, resolution of customer management responsibilities within Council, implementation of universal metering and billing, implementation of informative billing, improved customer education and improved accessibility to payment facilities.

6. Conclusion

Satisfactory progress has been made in the implementation of the WSDP 2002 given the numerous institutional, human and financial constraints that have prevailed in the period under review. Numerous accomplishments were achieved in the review period, some of which achieved national acclaim.

There were, however, several primary shortcomings, including the lack of progress in institutional reform, the sub-optimal budgetary allocations towards infrastructure development and replacement and the increase in debt. A significant shift towards a long-term view is required in the managing, operating and financing of Water Services if it is to be financially viable and sustainable together with affordable tariffs. The financial and economic modelling of the service is a tool that will assist decision makers in finalising the WSDP 2005. The new WSDP 2005 will examine various future scenarios from which critical decisions will have to be taken and a considered commitment made to the 5-year capital and operating plans and tariffs.

DETAILED REVIEW ON STRATEGIC PRIORITIES - INTRODUCTION

In terms of the Water Services Act 108 of 1997 (Section 18) a Water Service Authority is required to prepare a Water Services Development Plan (WSDP). This plan was completed and approved by the City of Cape Town in June 2002.

A further responsibility of the City of Cape Town to the Department of Water Affairs and Forestry (DWAF) is to submit an annual review of its Water Services Development Plan progress. This report provides a review of the WSDP for the City of Cape Town for the two years ending June 2004.

The WSDP Review is based on the two components found in chapter 9 of the WSDP:

1. The strategic issues

2. The list of key performance indicators affecting water services delivery

Actions and progress with respect to the strategic issues are reported on below using the sequence as listed in Table 9.1 of the June 2002 WSDP. The ‘strategies” are numbered sequentially but grouped under the ‘issues’ as they appear in the table.

Although additional strategic issues over and above those addressed below have emerged since the compilation of the 2002 WSDP, they are not specifically addressed here and will be included in the WSDP Update, to be completed in 2005. These issues relate to several aspects, mainly originating from the drastic cuts in the capital budget for the 2003/2004 financial year.

This WSDP Review must be seen in the context of delays in the restructuring of the City of Cape Town, which resulted from the change in political leadership in September 2002. Many issues in the WDSP depend on finalizing the organization design and placement process. To a large extent, this is the reason that a two-year review was undertaken, instead of a single year review for each of the two years. A key initiative that has fallen behind as a result of the delay in organization design is the Business Unit Project. The net result is that progress in many areas has fallen behind.

Ideally this WSDP Review should be read by referring to the relevant sections in the WSDP of June 2002. Reference is made by quoting the original ‘motivations’ used to draft the strategic issues.

STRATEGIC ISSUES

A CUSTOMER AND REVENUE MANAGEMENT

"In order to curb non-payment and increase revenue, meter reading, billing and credit control of the seven previous Administrations needed to be consolidated."

A1 Implement credit control

It was initially envisaged that with the formation of Trading Services Business Units, Water Services as the *Water Services Provider* within the City of Cape Town (the *Water Services Authority* in terms of the Water Services Act) would manage its own income. However income has now been centralized under the Chief Finance Officer for reasons of economy of scale for the entire municipality, with a consolidated bill for all municipal services including water and sanitation. Credit control has thus been centralized and future performance will be monitored possibly in terms of a Service Level Agreement between the parties.

Credit control was being actively pursued during 2002 by means of full cut-offs. This was constrained to some extent by the high levels of violence in certain areas. Tafelsig was, due to the violence in that area, subjected to a "mass" cut-off, thus creating a public relations crisis. Shortly after this the Mayor instituted a moratorium on all cut-offs and the advent of the provision of free water to all households required the utilization of "water enablers" or restrictors to be applied for credit control. While there was a significant increase in water and sanitation debt during the review period, the full roll-out of the new credit control procedures was introduced from early this year and is now being applied to all residential areas using restrictors after due warnings are given. Credit control to industrial and commercial debtors is carried out using the normal cut-off where required. Payment levels are approaching acceptable levels once again.

A2 Implement indigent policy

The new philosophy and strategies of Council that were approved in December 2002 focus, among others, on the need to develop policies which actively demonstrate care for the poor, i.e. "the development and implementation of an indigent policy framework".

During 2003/4 progressive consumptive tariff structures were derived under guidance of the City Indigent Policy proposals. Tariff modelling was carried out on information from a Consumer Behaviour Study of more than 600 billing districts across the Cape Town area.

The above process provided a foundation for the further development of an Indigent Policy Framework that will integrate the following developmental and service related strategies during 2004/5:

- The concept of the "Total Municipal Account" in the policy development combined modeling of tariffs and rates and affordability – both for the public and Council;

- Replacing or complementing blanket indigent grants and free basic allocation of services by a targeted approach;
- Implementation of pilot projects for the utilization of pre-paid water and electricity technology, linked with the policy on cut-offs and evictions;
- Integration of initiatives from the City Indigent Policy with the Equitable Services Framework looking at the broader Service Menu of Council;
- Implementation plan for the upgrading of Informal Settlements and addressing service delivery backlogs as well as policy development for dealing with backyard shacks and hostels;
- Protocols for engaging the community and mechanisms dealing with billing and income collection;
- Broad community consultation and buy-in on the provision of basic services, service levels, payment, sanctions and the development of a Service Charter;
- Integrated framework for the sustainable development of the city taking into consideration the social indicators, consumer behaviour, urban and spatial framework, economic opportunities, community services and mobility plan;
- Partnerships with communities, organizations and Provincial and National Government.

The implementation of the free basic services in the water and sanitation tariffs was a successful component of the Indigent Policy and is seen as a very positive element of our pro-poor services package. In addition, the roll out of Basic Services to all Informal Settlements which commenced in earnest during the period under review, contributed to a significant improvement in quality of life for many of the poor.

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A3 Establish customer and revenue management

Customer and revenue management is primarily addressed through a task team at corporate level.

Water Services customer surveys were performed during March and April 2002 and February and March 2003. Questions are largely based on the Customer Charter that was established during 2002 and as part of the WSDP. (The most recent survey was carried out in August of this year, but does not form part of this review). The results of the surveys indicate in general that the customers are satisfied with the service they receive from Water Services. In both cases e.g. more than 90% of customers indicated satisfaction with the quality, taste, smell, and pressure of the water supplied.

A call centre related to the Enterprise Resource Planning (ERP) was established during 2003, with a Water Services Emergency Response Centre being planned to cater for after-hour emergencies. (This was established in October this year)

The role of Water Services in customer and revenue management would have to be addressed anew when the Business Unit concept is implemented.

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A4 Ensure universal metering and billing

Only the former Cape Town and South Peninsula Administrations have staff under their direct control dealing with meter reading. The Water Services staff are assisting with the supervision of some of the other metering areas, but the arrangements are all temporary and unsatisfactory. As stated under item 1, billing was centralized under the SAP project and the first consolidated bills were sent out in the latter half of 2003. A comprehensive data purification program preceded this. Un-metered supplies to Parks and informal areas had meters installed.

Much work still has to be carried out in several areas, which are not currently being metered and billed, such as Joe Slovo in the Blaauwberg area. A project is currently under way to address this issue.

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A5 Implement informative billing

Informative billing as a principle was requested at the time of the SAP implementation project, but is highly constrained by the bill format, which is still viewed as "uninformative". A pilot project was launched early in 2004 to test the affect of informative billing on a selection of residents. This project is still underway.

The intention is that citizens would be able to see their previous 12 months consumption and view the results of their wise water use.

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B FUTURE INFRASTRUCTURE REQUIREMENTS

"Water Services envisaged spending in excess of R1,0 billion in capital expenditure over the 10 years following 2001."

B6 Perform ongoing analysis of financial affordability and sustainability

The financial affordability model for Water Services was further developed and modified. A consultant was appointed to download all the billing data for all the previous Administrations for the three financial years up to 2002/2003 and to provide Water Services with a billing and consumption record database. This information formed the basis for the 2003/2004 tariff determination exercise.

Specific aspects that affect the financial analysis are:

- Difficulties are associated with determining sustainability and affordability within Water Services due to the corporate requirement for applying 'cross subsidization'.
- The performing of the Blue Peter Study (which determined the Corporate affordability of the capital budget) and capital cuts as a result of the study.
- Non market related interest rates being applied to capital funding.

- The financial analysis is currently constrained by the unavailability of full financial statements for Water Services.

Now that SAP can provide a full billing year of data, we have the opportunity to improve on the modeling of consumption patterns and affordability limits for capital expenditure.

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B7 Investigate alternative funding mechanisms

Alternative funding mechanisms are being investigated as part of the process discussed under item B6. As mentioned one of the motivations is the high internal finance charges being applied.

Initial discussions were held with the US Aid linked Municipal Infrastructure Investment Unit in respect of BOT opportunities. A Section 78 process was undertaken for the Zandvliet wastewater treatment works, but was abandoned once the flow to the works was drastically reduced due to the application of pressure control on the water supply to Khayalitsha and subsequent reduction in leakage into the sewer system.

MIIU have been approached with a view to assisting with this aspect of the new WSDP.

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B8 Ensure adequate resource planning

Refer to item K37 (Establish ring fenced business unit)

Resource planning will best be performed once ring fencing of Water Services has been achieved. 😐

C FINANCIAL MODELLING AND TARIFF SETTING

"The water tariffs of the former MLC's had been converged, but the sustainability and impact of major capital infrastructure needed to be confirmed. Sanitation tariffs had also not been consolidated."

C9 Address the strategic issues covered in the financial component of the WSDP

All issues covered in the financial component of the WSDP are addressed under other items.

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C10 Perform financial modelling

Refer to item B6 (Perform ongoing analysis of financial affordability and sustainability).

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C11 Formulate a tariff policy and set tariffs

A uniform rising block tariff structure for water was implemented in the 2001/2002 financial year, with slight modifications added since the beginning of the 2003/2004 financial year.

The sanitation tariff conversion was implemented in the 2002/2003 financial year. This included a fixed portion based on the value of the property capped to a ceiling as well as a volumetric based portion.

During 2002/03 progressive consumptive tariff structures for 2003/04 were derived under guidance of the City Indigent proposals. Tariff modeling was carried out on information from a Consumer Behaviour Study of more than 600 billing districts across the Cape Town area. The Sanitation fixed charge was based on a percentage in the rand and comprised 50% of the costs, with the other 50% coming from the volumetric portion.

The current water tariffs (before restrictions) represent the lowest average cost of water in the major cities in South Africa, with up to 6kl per month free and 6 to 12kl per month charged below cost and thus subsidized. Also, all households living in a house with a value less than R100 000 receive a R20 rebate on water services charges.

D WASTEWATER TREATMENT

D12 Upgrade wastewater treatment facilities

The ongoing requirement relating to the upgrading of ageing and outdated equipment/processes as well as capacity extensions and the introduction of new systems was addressed in the Strategic Investigation of Bulk Wastewater which identified a requirement of some R 150 million to be spent each year over a 10 year period beginning in the 1999/2000 financial year. This amount has annually been pursued but actual allocations were in the order of R 105 million over the first 3 years, reducing to R 82 million in 2002/2003 and less than R 40 million in 2003/2004.

As a result, projects have had to be reprioritized and the upgrading programme has been delayed. As a result the risk of impacts on public health and the environment due to inferior wastewater effluents is expected to be prolonged. The lack of financial investment in infrastructure results in “asset stripping” and causes increased risk of mechanical breakdown and process failure while effectively escalating the eventual capital improvement cost. Despite the constraints on capital expenditure, the Wastewater Treatment Department achieved actual expenditures for both of the review years of approximately 98%.

The capital provision for 2004/05 was increased to R80m thus improving the situation, but in order to meet the growing demand, will have to be further increased. The updated Master Plan, which is being prepared in conjunction with DWAF will address the 10 year programme requirements to meet the needs of the City.

D13 Investigate alternative means to facilitate upgrading of wastewater treatment works

Due to the high capital cost of upgrading wastewater treatment plants it is necessary to investigate alternative means of providing:

- funding
- treatment processes
- operational control

Opportunities exist for the private sector to become involved in the design, construction and operation of wastewater facilities inclusive or exclusive of capital funding while reimbursement is in terms of an agreed formula over a certain period. This may offer certain advantages to the Council in overcoming certain limitations associated with being an essential service provider of a multi-disciplinary undertaking against a background of a shortage of funds. The Municipal Systems Act stipulates how alternative mechanisms should be investigated.

The requirements of the Act, however, make investigation of such alternative service delivery mechanisms expensive and the outcomes uncertain. The Section 78 process in section B8 of this review was such an attempt.

Grant funding offers the most desirable financial option and the wastewater department is actively pursuing this as a means of supplementing Council's capital funding allocation. In addition, new technologies for wastewater treatment appear to offer certain process and cost benefits and information in this regard is being collected to assess if the technology is suitable for introduction to the local systems.

Regarding the operation of treatment works by contract means, one of the City's works has been operated in this manner for some years and it is evident that certain benefits exist for improved service delivery. Possibilities exist at certain other facilities for this option to be investigated further by means of the Section 78 process.

The proposed Fisantekraal WWT Plant offers an opportunity to explore the various options available and MIIU are engaged to assist in this process.

D14 Improve systems and processes for increased efficiency of waste water treatment works

Performance optimization of wastewater facilities is being addressed by means of a specialist software application that analyses the capabilities of existing processes relative to the wastewater loading characteristics. This sophisticated computer model identifies limitations at corresponding flows or loadings and is invaluable for capacity assessment. The model can predict outcomes of possible changes to the treatment processes and is therefore a valuable tool for strategic planning and the prioritization of options.

The introduction of an Environmental Management System has commenced at Potsdam WWTW. This programme which aims to integrate operational control with environmental awareness and institutes planned reactionary measures to operational situations is being directed by specialist consulting engineers. It is intended to pursue this initiative at all WWTWs.

Performance management is being practiced at each works and requires managers to be more business oriented. Outputs are measured and compared with benchmarked

targets, cost control is emphasized and plans are put in place for better utilization of resources.

D15 Investigate affordability of 2010 standards for wastewater treatment

The City raised issues related to the implications, including financial, of having to comply with the proposed 2010 standards. This assisted in motivating SALGA's approach to DWAF to explore the implications of the 2010 standards before imposing such standards in a way which is unaffordable to most municipalities. In the meantime, the actual standards for each plant are arrived at in consultation with the local office of DWAF.

The affordability of the required standards at each plant is to be appraised when formulating the financial model for the WSDP.

D16 Review Strategic Wastewater Plan

A bulk wastewater strategic study was undertaken in 1998/99 which investigated the effectiveness of present treatment facilities and the requirements to improve service delivery in the short and longer terms. The programmes recommended in the study formed the basis by which upgrading and capacity extensions have been pursued via the capital budgets for the last five years. The recent capital budget limitations have made it necessary to more urgently pursue the review of the strategic plan albeit at the level of planning how to overcome the capital budget limitation. Specific planning investigations that were performed during the period of review included the rationalization studies pertaining to the Mitchells Plain and Cape Flats treatment works.

An inclusive, multi-disciplinary approach with the judicial use of consultants and detailed technical workshops has been successfully applied to all the planning during the period under review. The upgrading of Potsdam, Zandvliet and Kraaifontein WWTWs were all planned in this fashion.

A Revised 10 year Master Plan is being prepared as part of the new WSDP.

E INTEGRATED WATER RESOURCE PLANNING; WATER DEMAND MANAGEMENT

"Motivation: See F below."

E17 Implement recommendations of the Integrated Water Resource Planning Study (IWRPS)

The recommendations of the IWRPS are being addressed based on the prioritization of items or initiatives through a scoring system. The full list of initiatives with their scores is shown in the table below.

IWRPS - Summary of options and scores						
Option	**Yield**	**Financial**	**Socio-ec**	**Accept ability**	**Environ mental**	**Overall Score**
Pressure management	64	84	62	95	93	83
User education	64	78	68	91	93	80
Elimination of automatic flushing urinals	57	76	59	94	93	79
Tariffs, metering and credit control	69	100	69	29	93	75
Voëlvlei *	87	83	54	83	51	74
Leakage repair	52	64	85	75	93	73
Lourens River Diversion	78	84	66	74	44	72
TMG Aquifer *	70	75	73	79	39	70
Eerste River Diversion	70	75	54	78	53	69
Cape Flats Aquifer	66	69	57	75	70	69
Treated wastewater for local urban and industrial use	41	75	31	68	97	67
Promotion of private boreholes	38	59	61	74	37	57
Desalination *	73	25	63	85	82	57
Introduction of water-efficient fittings	48	50	64	38	93	56
Promotion of grey-water use	29	55	28	63	82	54
Treated wastewater for commercial irrigation farmers	48	72	10	26	82	51
Treated wastewater reclaimed to potable standard	71	17	71	38	97	47
**** Options investigated in CMA Bulk Water Supply Study***						

Some actions taken pertaining to options identified in the IWRPS are described under items E18 and E19.

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E18 Aggressively implement water demand management strategy

Significant progress has been made in the implementation of the WDM policy and strategy despite the difficult circumstances created by the inability to fill any posts. A major focus this year was on the implementation of the highest benefit “on-the-ground” projects so that immediate benefits could be achieved. The Integrated Water Resource Planning Study showed that the implementation of initiatives known as Package 1 (i.e. Pressure Management, User Education, removal of Automatic Flushing Urinals, leakage repair and tariffs metering and credit control) and Package 2 (i.e. Private Boreholes, Water Efficient Fittings) need to be accelerated in order to avoid more severe water restrictions being made necessary prior to the completion of Berg River Project Dam.

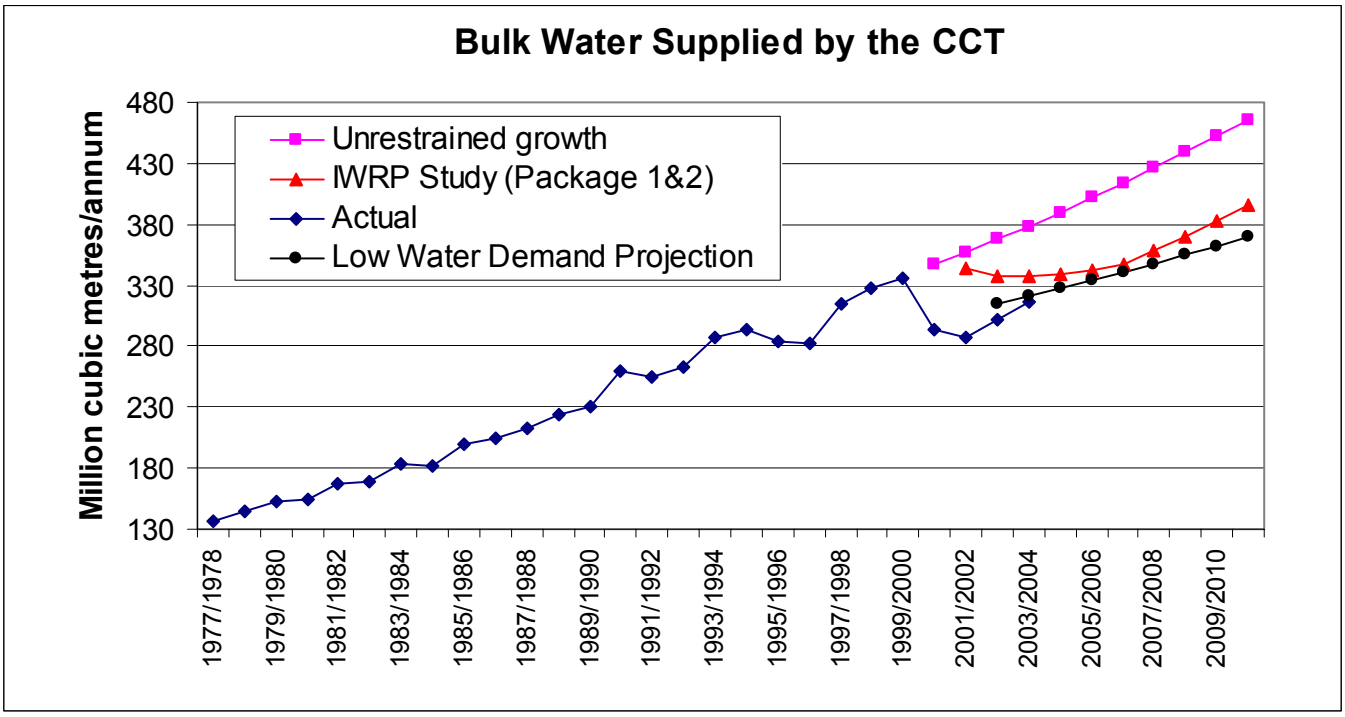
The efforts of the Directorate have, therefore, concentrated on the most beneficial initiatives listed in the IWRP Study. Highlights of the two years were:

- Public Open Space procedures developed

- Initiation of an Open Space and Recreational Areas Management System
- By-law to limit or restrict the use of water was promulgated
- Expansion of Khayelitsha Pressure Management System to Site C
- A metropolitan wide investigation into Pressure Management
- Planning and updating of master plans
- GIS and data logging equipment installed
- Zone meters installed
- Annual Media Campaigns
- Annual Water Week events in March 2003 and 2004 and associated competitions
- Annual Water Week Symposium – launched with DWAF in March this year
- Customer survey showed that 57% of residents had changed their behaviour with respect to water use
- Khayelitsha water awareness and plumbing repair project
- Upgrade and extension of treated effluent recycling

The City remains on the 2010 target with current consumption 17-18% below the unrestricted growth projection. The progress with respect to the various strategic objectives is detailed in the 'Progress report on Water Demand Management for 2002/2003'.

Actual water demand and the projection for different scenarios including that of WDM being implemented successfully are shown in the figure below.



E19 Monitor the 5 year water demand management implementation programme

A comprehensive report setting out progress related to the 5 year water demand management implementation programme was submitted to the City's Trading Services Portfolio Committee in 2003. Progress was reported on with reference to specific actions taken in terms of the general strategy, as summarized below:

- Identify “Champions” for Water Demand Management amongst Politicians and define their role of promoting WDM within the community and within the Municipality: The Executive Councilor, Trading Services and the entire Trading Services Portfolio Committee were all identified as Champions for Water Demand Management. They are all invited to awareness campaigns such as Water Week as well as occasions to mark the success of WDM projects.

- Raise the profile and priority of WDM in the organization in order to achieve the objectives set out in the Policy and in this Strategy: Although the lack of permanent appointments is hampering the assignment and delegation of clear-cut roles, progress is being made through consensus and group management. In line with the strategy, managers are being motivated to be responsible for managing and motivating their own WDM projects. This will form a key component of the Performance Management System currently being implemented in the City. Progress was also made by implementing WDM water awareness training programmes. Further enhanced training programmes have been obtained for advancing this initiative in the current year.

- Implement a bulk meter management system to ensure accuracy of measurement: A specialist data acquisition, monitoring and management package for bulk meters was acquired and commissioned.

- Draft and implement a municipal policy and strategy to ensure wise water use within the Municipality: The several initiatives implemented in the reporting period include diverse actions, such as establishing of a Public Open Space Irrigation Procedure, performing of in house training in WDM principles and applications, replacing of Auto Flushing Toilets, establishing of a GIS based Open Space and Recreational Areas Management System (OSRAMS), launching of a Municipal Building Investigation to estimate and rank water wastage in Council owned or lease buildings. Parks and Open Spaces recently completed a strategy to reduce their consumption and comply with the current water restrictions.

- Develop an appropriate Water Services Bylaw to legislate the optimal use of water, incorporating the essential water demand management requirements to limit the inefficient and wasteful use of water: The By-law to limit or restrict the use of water approved by Council in March 2002 is being supplemented with a further By-law relating to Water Services. The Wastewater and Industrial Effluent By-law was approved by Council in October 2004.

- Leakage and waste minimization through the planning, design, construction, operation and monitoring of suitably located District Metering Areas and pressure management systems: Initiatives in this respect included expanding of the Khayelitsha Pressure Management project, a Pressure Management Investigation across the entire City, identification of zones for leakage detection and water wastage as part of Master Planning, purchasing of GIS and logging equipment and installation of zone meters in the Oostenberg and Helderberg Admin Areas.

- Promote the optimal use of water by consumers through education awareness programmes and projects: The various activities that were undertaken to promote optimal use of water by consumers included a Media Campaign in general and through newspaper supplements, arranging Water Week Events and school water saving projects and upgrading and equipping training centres for training of internal staff and external project plumbers.

- The removal and prohibition of all Automatic Flushing Urinals (AFUs): As mentioned above a substantial number of AFUs have been removed. The updating of the Water Services By-law currently under way will address the issue of the prohibition all AFUs.

- Minimize water losses in low-income housing through targeted plumbing repairs and education programmes: The main focus during the reporting period was Khayelitsha where a leaks repair project was conducted with the participation of the local community and in Nomzamo (in Helderberg).

- Continually optimize tariff structures, ensure accurate metering and universal billing and a rate of payment that makes financial viability certain: The rising block tariff structure that is implemented in the City has proven to be highly effective in reducing consumption. Although the structure is considered to be close to optimal, continuous monitoring of consumption patterns is performed to make adjustments on a rational basis.

- Maximize the use of alternative sources of water: Actions in this regard included ground water exploration for sport fields & amenities, performing of a study to identify all areas where there is an opportunity to use recycled water, upgrading of the Bellville recycled water works to improve the quality and ensure supply and installation of new recycled water pipe infrastructure. A comprehensive study into the potential for the extension of the recycling networks was undertaken. This will be directing our efforts to maximize this valuable resource which will in turn reduce our demand for potable water in the City.

- Make strong representations to SABS to draft a National Performance Standard for water fittings, appliances and devices: While there has been no real progress in National Regulations in this regard, Water Services will continue to provide input and lobby for progress in the establishing of a National Performance Standard for water saving devices.

The imposition of the current restrictions has provided an excellent opportunity to combine the new Ten Point WDM Strategy into a sustained medium and long term Demand Management approach.

☺

F WATER A SCARCE RESOURCE

"Water demand at the time exceeded available water supply at a level of 98% assurance. The average historic growth in water demand for the Cape Metropolitan Area up to 2001 had been between 3% and 4% per annum.

F20 Develop additional resource schemes

One of the supply side recommendations emanating from the results of the Integrated Water Resource Planning study was that a Feasibility Study and Pilot Project be initiated to further investigate the potential of the Table Mountain Group aquifer as a water source for the City of Cape Town. In April 2002, the City of Cape Town appointed a consortium of consultants to conduct a feasibility study and Pilot Project delivering 3 to 5 million m^3 of water. The study has been divided up into an inception, preliminary, exploratory and pilot project phase. Based on the results of the Preliminary Phase, which is now almost complete, the City of Cape Town will make a decision on whether or not to proceed with the exploratory phase.

The planning of the Voelvlei Augmentation scheme has been placed on hold due to the successful implementation of Water Demand Management significantly reducing the water demand of the City of Cape Town. This has resulted in a new water resource, after the Berg Water Project, only being required in approximately 2012/2013.

The implementation of the Berg Water Project (BWP) has over the last 5 years been linked to the implementation of water demand management by the City of Cape Town. With the approval of the Water Demand Management Policy and Strategy by the City Council and the submission of the then draft "Comprehensive" Water Services Development Plan to DWAF in December 2001, the Minister of Water Affairs and Forestry satisfied himself that the City was committed to the implementation of Water Demand Management. The Berg Water Project received Cabinet approval to proceed in April 2002. The project is to be implemented on behalf of the Department of Water Affairs and Forestry by the Trans Caledonia Tunnel Authority (TCTA). The contract for the construction of the Berg River Dam was awarded to the Berg River Project Joint Venture consortium for a value of R548 million (excluding contingencies and escalation, but including VAT) in June 2003.

It is currently anticipated that first water from the Berg Water Project will be available by the end of 2007. Based on current medium term water demand projections it is estimated that water from the Berg Water Project will be fully utilized by 2012/13, where after a new water resource will be required.

F21 Investigate additional resource schemes

A range of additional water resources have been investigated to date. The results of these investigations are summarized in the table under item 17 based on their 'scores' according to different criteria. It should be noted that investigations of some of the options, such as the TMG Aquifer and Desalination, are still being refined and the 'scores' could alter significantly.

F22 Investigate the sitting of future water treatment plants

In February 2003, a consortium of consultants was appointed by the City of Cape Town to carry out a "Bulk Water Infrastructure Planning Study". One of the objectives of this Study is to consider alternatives sites for a new Water Treatment Plant, associated bulk pipelines and bulk storage reservoirs. A Scoping Study as part of the Environmental Impact Assessment for the project commenced in February 2004. In order to meet the peak week water demands of the City of Cape Town and neighboring local authorities it is currently anticipated that the new water treatment plant and associated infrastructure will be required by the end of 2010.

F23 Obtain confirmation from DWAF on availability of future water resources

There was consensus between officials from DWAF and officials from the City of Cape Town that an Agreement for the supply of water from the Berg Water Project should be drafted within the context of a broader agreement for the supply of water from all

existing Government Water Schemes (GWS) in order to manage the supply of water from GWS, as well as from City owned dams, as a single integrated system governed by one agreement. A process of discussion and negotiation, concerning the supply of raw water from the Department of Water Affairs and Forestry to the City of Cape Town was entered into between June 2002 and March 2003. During this process a "Raw Water Supply Agreement" was drafted.

The "Raw Water Supply Agreement" between the Department of Water Affairs and Forestry and the City of Cape Town including the Berg Water Project (Skuifraam Dam) was submitted to and approved by the Executive Committee of the City on 19 March 2003. The Agreement was officially endorsed by the Minister of Water Affairs and Forestry and the Mayor of the City and signed by the Director General of DWAF and the City Manager in a signing ceremony on 15 April 2003. The signing ceremony was hosted by the Mayor and attended by representatives from DWAF, TCTA and the City.

The Agreement between DWAF and the City covers the allocation of water from existing water resources as well as principles to be adopted for future water resource development.

DWAF is also in the process of initiating a "Reconciliation Strategy" which will reassess the water resources available to the City of Cape Town, neighbouring Local Authorities and Agriculture. The outcome of this study will be a roadmap for future water resource development in the region.

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G STORMWATER INFILTRATION INTO THE SEWER SYSTEM

"Stormwater infiltration in the sewer system was (and still is) a major problem, especially in the Cape Flats area, affecting the available capacity of the wastewater treatment works."

G24 Commission a study to determine the extent and priorities with respect to storm water ingress

Sewer flow is monitored continuously at Waste Water Treatment Plants. As part of master plan studies, sewer flow measurements have over the past three years also been taken at several strategic points for durations varying from one to three weeks, thus providing information on the extent of storm water ingress into the sewer system. Due to budget and staff constraints further detailed investigation and prioritization of actions have been delayed.

As soon as Placement has been finalized, this should be able to be implemented.

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G25 Aggressively implement an Ingress Management Plan

Due to budget and staff cuts there has been no progress in this regard.

☹

H SERVICE DELIVERY

"Apart from the responsibility of the City in terms of the Water Services Act, basic services are also regarded as the main thrust of the WSDP in terms of the recent DWAF published Strategic Framework for Water Services."

H26 Compile a 5 year service delivery program for basic services

The City of Cape Town has in the order of 100 000 informal households which are partially serviced. The Servicing Informal Settlements project was established to improve service delivery and conditions in these settlements over 3 to 5 years. The aim of the project is to reconfigure all settlements through the creation of access tracks, the installation of engineering and community services, and the de-densification of too dense settlements by developing incremental upgrade areas to relocate some of the residents.

The project objectives included: The provision of improved living environments, the reduction of health, environmental, fire and flooding risks, the reduction of crime, improved access to free basic services, the generation of employment, the release of land for growth and demand and the integration of informal settlement communities into the City.

Services are being provided at two levels of service, namely Temporary and Rudimentary. The level of water service is the same for both, and includes a standpipe within 200m providing water at 6 kilolitres per household per month and at a minimum flow rate of 10 litres per minute. Fire Hydrants are also provided where possible at 90m but not more than 150m from any dwelling. Temporary sanitation is set at one toilet per 5 families and at the Rudimentary level, one toilet to every 4 families.

The project includes community consultation, education and capacity building to ensure that the project is sustainable.

Current planning provides for addressing the backlog of some 30 000 households and the net annual growth of 8 000 households in an accelerated programme over 3 years.

☺

H27 Implement a 5 year service delivery program for basic services

In late 2002, an audit of all informal settlements in the City of Cape Town was undertaken using aerial photography and ground surveys to assess the number of dwellings and the status and levels of services in the settlements.

To ensure the rollout of the project implementation on a fair basis throughout the City, criteria were developed to determine the level of service and which settlements should be serviced. These criteria included among others, the dwelling density, community acceptance, new housing programs and environmental sensitivity. During 2002/2003 a total of approximately 18 000 and 15 500 households were provided with water and sanitation services respectively. The Mayor in her budget speech in May 2004, committed to providing emergency services to all informal settlements by the end of June 2004. This milestone was essentially met, except for a few exceptions due to high densities and delays in obtaining consent from owners to provide services on their property. During 2003/04, 3000 toilets and 1000 standpipes were installed in the informal settlements.

☺

H28 Draft consolidated water by-laws in terms of Water Services Act

The Water Services by-law to limit or restrict the use of water was implemented in March 2003. The Wastewater By-law was submitted earlier this year and given final Council approval in October this year.

The Water Bylaw is currently being compiled with a phased approach pertaining to the different components of the service.

I Asset management

"Maintaining assets is a fundamentally important requirement for maximizing life expectancy of infrastructure. Lack of investment in this regard results in higher maintenance costs, increased risk of failure and earlier than expected replacement."

I29 Draft an Asset Management Plan

The current implementation of the ERP (SAP) system in the City has provided the opportunity to establish a well organized comprehensive asset register and will greatly assist in addressing the issues around an Asset Management Plan (AMP).

The Project Definition Report for establishing of the AMP was compiled during 2002/2003. The Asset Management Plan has now become the Asset Management Project following the success of the Water Services Wastewater Mechanical Pilot Project. It is anticipated that the Asset Care Centre will be expanded in the new financial year in order to bring the whole of Water Services into the "Care Zone."

I30 Implement an asset management system

The Plant Maintenance Module of the SAP ERP solution has been configured and populated to fulfill the role of a Computerised Maintenance Management System for Water Services. Maintenance work is done through the Plant Maintenance Module and all other areas in Water Services will be identified and through the expansion of the Asset Care Centre brought under the asset management processes. The only risk is that there will be insufficient budgets for implementing the measures proposed by the management system.

All Water assets will be under the management of the Asset Care Centre by June 2005.

I31 Ensure capital expenditure for adequate infrastructure replacement

The amount budgeted for capital expenditure during the 2002/2003 financial year was R361 394 892 and the amount spent was R260 013 105, an expenditure ratio of R.

Under-spending was due to procurement delays, budget cut-backs and delays due to budget rationalization at more than one occasion.

The budgeted and spent capital amounts for 2003/04 were R218 933 724 and R154 604 967 respectively, representing a 71% expenditure. Here again, the delayed final approval of the budget, placement delays, construction delays and changes in the procurement policy affected the scale of expenditure.

The budget for 2004/05 did, however, represent the turning point in terms of providing the required funding for replacement of infrastructure. In conjunction with Finance, Water Services set up an Asset Financing Fund in terms of the new GAMAP regulations. The surplus accrued during 2003/04 contributed to the R58m AFF funded capital items for asset replacement. Pipe, sewer, pump stations, meters and WDM all benefited from the AFF fund.

J Master planning

"It is considered essential to establish integrated Master Plans for expansion and upgrading of water and sewer systems, in order to optimize existing operation and to ensure optimal prioritization of capital projects in accommodating future growth in the entire service area of the City."

J32 Establish Water Master Plans for areas which currently do not have comprehensive plans

The establishing and updating of Water Master Plans is being performed on an ongoing basis within budget constraints. Priority is given to areas with a high rate of development. During 2002/2003 a Water Master Plan was completed for Oostenberg.

During 2003/04, the masterplan for Bellville (previous 1994) was updated to the latest version of WADISO with the optimization of cross boundary options. This included an update of Durbanville, Kraaifontein, Brackenfell. All high growth areas were updated as well as the Blaauwberg and Helderberg areas.

J33 Establish Sewer Master Plans for areas which currently do not have comprehensive ones

The establishing and updating of Sewer Master Plans is being performed on an ongoing basis, and dealt with within budget constraints. Priority is given to areas with a high rate of development or where existing systems could be running at full capacity within the foreseeable future. During 2002/2003 a Sewer Master Plan was completed for the rapidly developing Kuils River area.

Masterplans for Durbanville/Kraaifontein and Blaauwberg Masterplan were completed. Increased demand in the Eastern (Helderberg and Kuils River) areas required a revisit of the masterplans for the builk infrastructure which will *be completed 2004/2005*. The Masterplan for CBD of Cape town and the Athlone WWTW Catchment was updated to cater for proposed developments.

J34 Establish a data management bureau

Details for the composition and implementation costs of a data management bureau, through which data and models of water and sewer systems will be updated and maintained on a continuous basis, have been established.

A renewed plan to get this up and running is proposed for 2004/05.

☹

K Fluoridation of potable water

"The fluoridation of drinking water at the proposed dosage would have required a capital investment of R11 million, a running cost of R10 million per annum as well as major implications on the operation of the treatment plants."

K35 Compile a fluoridation implementation program

In terms of Regulation no. 873 under the Health Act, 1977 (Act no. 63), Schedule: Regulations on Fluoridating Water Supplies (September 2000), every water provider in South Africa must practice fluoridation, unless exempted in writing by the Director-General of the national Department of Health. As the water provider for the Cape Metropolitan Area, this legislation is applicable to the City of Cape Town.

Due to increasing adverse attention from the public, however, a meeting by the Parliamentary Portfolio Committee of Water Affairs and Forestry was held on 12/06/2002 (subsequent to the Regulations on Fluoridating Water Supplies being promulgated) to discuss the concerns about health, environmental and ethical issues regarding water fluoridation. It was agreed that this matter needs to be investigated further and alternatives to water fluoridation considered.

The National Department of Health, the Department of Water Affairs and Forestry, the South African Association of Water Utilities, the South African Local Government Association (SALGA) and the Water Research Commission have since formed a Committee to guide the implementation of fluoridation in South Africa. On 04/00/2002, this Committee, known as the Joint Fluoridation Implementation Committee (JFIC), agreed that a "Front Runner" approach be adopted. This approach requires the selection of a few specific organizations to be used as the initial front-runners for the implementation of fluoridation regulations while appropriate research is carried out.

The JFIC identified the City of Cape Town as a possible front-runner candidate. Criteria, however, have to be established against which possible candidate local authorities will be evaluated. At this point in time the City of Cape Town has received no further notification of its proposed front-runner status and as such has not yet commenced with fluoridation. In addition to this, SALGA have advised local authorities not to proceed with the implementation of fluoridation until further investigations have been carried out. The City of Cape Town also proposes to conduct a full Environmental Impact Assessment prior to implementing fluoridation. During this assessment, the public will be given a further opportunity to comment on this issue.

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L Organizational transformation

L36 Complete macro and micro organizational design

The design and appointment of the top structure was completed in June 2003. A Transformation Team was set up in December and commenced Micro Design (3) in January 2004. Due to various delays the micro design has not been finalized.

☹

L37 Establish ring fenced business unit

The Section 78(1) assessment finalized in November 2001 established that an internal ring-fenced business unit be established.

Project Managers were appointed in April 2002 for Trading Services (Electricity, Solid Waste and Water Services) with a sub-project manager for each service. Various work streams were completed during the year:

- All infrastructure assets have been valued in terms of GAMAP and their condition assessed and their remaining lives and reported on.
- All infrastructure assets' capital and maintenance programs have been evaluated and reported on with recommendations.
- The service has been financially ring fenced with its own set of financial statements.
- A framework for compiling service level agreements (SLAs) with respect to the full range of support services has been produced.
- A draft service delivery agreement (SDA) between the service and the authority has been produced.
- A comprehensive report containing extensive recommendations with respect to establishing a fully-fledged and functional internal business unit has been completed.

The following issues prevent the finalization of the implementation of the internal business unit:

- Finalization of the council wide organization design and placement
- Approval of the SLAs
- Approval of the SDA
- Status and position of the support services
- Delegations to the Business Units.

All the work carried out to date was reviewed and the outstanding work assessed by independent consultants who re-affirmed the recommendations. The report to Council in June 2004 recommending the formation of a Ring Fenced Business Unit was adopted.

😐

L38 Implement Enterprise Resource Planning (ERP) System

The City implemented the SAP ERP system during the course of 2002 and 2003 with advantages to Water Services including:

- Availability of a single version of accurate data;
- Real time functionality;

- Ability for Metro wide invoicing;
- Integration within Water Services as well as on corporate level.

Release 1 of this system, with the exception of Plant Maintenance, was installed first and deals mainly with the controlling roles, Materials Management, Projects Systems, Accounts etc.

Release 2 which became functional in the City from September 2003, deals with Income, Revenue and Debt Management.

Plant maintenance was implemented during the course of the year and completed by the end of 2003.

L39 Draft Service Provision Agreement between Water Services Authority and Water Services Provider

This item is addressed as part of the process described under item L37.

L40 Draft Service Level Agreements for internal service provision

Task teams to address Service Level Agreements on corporate level were set up and service offerings completed. Regular Service Improvement Team meetings took place initially, but most of them waned after the delays in implementing the Organizational Design. Mandating of Service Level Agreements has also been delayed due to organizational restructuring delays.

L41 Establish performance management systems (including benchmarking)

The balanced scorecard was accepted as the corporate strategic tool. Strategy grids and indicators, based on Key Performance Indicators (KPI's), were established.

Increasing demands for various kinds of background or progress information, usually in questionnaire format, is being made by different levels of government, including DWAF There is also increasing interest in the Water Industry internationally to implement comparative process benchmarking. The reasons for this are firstly to measure oneself, (a key requirement for effective management), but also to introduce an element of competition in a generally monopolistic environment, as well as identify areas for improvement in comparison to others. Cape Town Water Services is involved in benchmarking projects such as the Water Utilities Partnership (Africa), the SA Association of Water Utilities (SAAWU), the Water Research Commission's (WRC) national pilot project and the City Water Managers Forum (CWMF) project under the auspices of the Cities Network. While there has been a vast improvement in benchmarking figures, the remaining constraint is obtaining cogent consumption data from SAP.

L42 Obtain ISO Certification for Bulk Water

During the 2002/2003 financial year the Bulk Water Department went through an intensive internal audit to identify areas of non-conformance with regard to the ISO 9001 Quality Management System, and to identify opportunities for continual improvement.

During the period 25 to 27 June 2003, a formal assessment of the Bulk Water Department took place by a SABS accreditation body. The recommendation emanating from the audit was that the SABS accreditation body would support the ISO 9001:2000 status for the Bulk Water Department subject to all the audit findings being satisfactorily addressed and closed out. This was done, and in October, Bulk Water were the first Bulk Water Water Services Provider in the country to obtain the ISO: 9001: 2000 accreditation.

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L43 Obtain ISO Certification for Wastewater Treatment

Planning commenced during 2002/2003 for the introduction of an Environmental Management System (EMS) at Potsdam Wastewater Treatment Works that will integrate treatment process requirements and operational control with environmental protection. Specialist consultants were appointed recently to lead this initiative which involves operational and management staff. The EMS is based on best practice approach for such systems with ISO 14001 used as a guide. The EMS will be extended to incorporate the new sections of the Potsdam Works once constructed.

The target is to complete EMS for Potsdam by June 2004 and thereafter for three additional treatment works per annum until all works are included. ISO 9001 can then follow after this.

😐

L44 Obtain ISO Certification for Reticulation

The existing ISO Quality Management System certification at SPA Water Division is being maintained.

Good progress was made during 2001 with preparations for certification of the whole of Reticulation and documentation was placed on the Water Services website on the Intranet. No further progress can be made until after staff placement. Some revision due to SAP ERP will also be necessary. Once recommenced, this will take approximately a year to implement.

😐

M Water quality

M45 Perform continual monitoring of water quality

Water quality is monitored through extensive regular sampling and testing by the City's laboratories of samples from open water bodies as well as from the effluent of all

Wastewater Treatment Works. The sampling regime of potable water in the reticulation system was revised early in 2004 in order to ensure an even coverage of the whole City.

☺

N Metropolitan spatial development framework

N46 Ensure alignment between the long term vision of the MSDF and the WSDP

A task team was established to achieve alignment of the MSDF and WSDP long-term vision on a continuous basis.

😐

O Population growth

O47 Monitor the effect of HIV/AIDS on water demands and projected water demands

In 1998/99 the Department of Water Affairs and Forestry (DWAF) commissioned a multidisciplinary consortium of consultants to analyze the past, present and future urban demand for water in the Cape Metropolitan Area.

The Study comprised of the following:

- updating historical water use patterns.
- a comprehensive profile of the households in the Study area by population group and according to household size, income level, kind of dwelling, sanitation etc.
- an economic profile of the study area with a view to determining the relationship between economic growth and the demand for water.
- population forecasts taking into account HIV/Aids, fertility, mortality and migration.
- the formulation of scenarios/projections/forecasts regarding water demand in the Study Area.

The report which was completed in January 2000 identified that economic growth and institutional capacity were the two main drivers of water demand. The scenarios identified that the growth in water demand would vary between 0,7% and 2,8%, dependent upon the growth or advances made in the two key areas mentioned above.

In order to better assess and understand current and future demand it was decided to review the Study which was carried out in1998/1999.

As the Study is predominantly a review of the Study carried out in 1998/99, the consortium was re-appointed in March 2003 to update the previous Study.

The revised growth parameters have been presented, and the final report is expected shortly.

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KEY PERFORMANCE INDICATORS

The review of the Key Performance Indicators (KPIs), as defined in the November 2001 WSDP, is presented here in the form of updated figures in the original table, which was slightly modified to show actual versus target values.

Two important aspects affecting interpretation of the KPIs should be considered as follows:

Accuracy of KPI values

The accuracy of several of the KPI values depends almost entirely on information obtained from databases or management information systems that have been populated over a sufficiently long period. The KPIs related to for example: reinstatement of failed services, should be determined from information provided by a maintenance management system, properly operated over a period of at least one year. For a number of KPIs this type of system did not exist or was not populated sufficiently over the past two years to provide reliable values in some of the administrative areas and certainly not city wide.

The fact stated above is one of the main motivations for implementing the ERP, which only became operational in November 2003. It means, therefore, that reliable values for the relevant KPIs will at the earliest only become available towards the end of 2004 and in some cases even later depending on the reliability of supporting databases.

For the purposes of the present review, estimates were made for values of the KPIs subjected to the problem discussed above.

Representation of KPI values

In certain cases KPIs as originally selected, attempt to measure the results of processes in an oversimplified way, to the extent that they could lead to gross misinterpretation.

A specific example of the above type of problem is the KPI related to the quality of potable water produced by Bulk Water. A single value was selected to provide the percentage of measured samples complying with standards. Presently this value does not attempt to convey information about the degree to which a sample failed or succeeded for the different measured indicators. A weighting system can be adopted in some way to address this issue, but it could be that we would have to resort to a wider range of KPIs. These possibilities will be addressed as part of the updating of the WSDP.

For the purposes of the present review, values are provided based on interpretation of the measured results.

A further example of this is related to the KPI representing the quality of effluent from the Wastewater Treatment Works, with an even more complex situation existing, e.g. having to account for the volume of effluent produced at each plant. The compliance value provided in the table is based on a volume weighted average. The intention is to address the issue further in the WSDP updating process.

Review of Key Performance

Item	KPI	Note	Unit	2000/01	2001/02	2002/03	2003/04	2004/05	TARGET
1	**Consumer profile**								
1.1	Consumers with at least basic (rudimentary) water service		%			**97%**	98%	99%	**100%**
1.2	Consumers with at least basic (rudimentary) sanitation service		%			**88%**	89%	92%	**100%**
2	**Quality of Service**								
2.1	Water Continuity (Unplanned Interruptions Repaired within 6 hours)	1	%	*97%*	*97%*	97%	96%	95%	**95%**
2.2	Water Continuity (Consumer notification of planned interruptions within 48 hours)	1	%	98%	98%	98%	98%	98%	**98%**
2.3	Water pressure (Consumers with at least 2.4 bar pressure)	1	%	99%	99%	99%	99%	99%	**98%**
2.4	Effluent removal (interruptions repaired within 6 hours)	1	%	96%	96%	96%	95%	95%	**95%**
2.5	Response to verbal customer queries within 2 days	1	%	98%	97%	96%	97%	98%	**100%**
2.6	Burst pipelines shut down within 1 hour	1	%	98%	95%	92%	95%	96%	**98%**
2.7	Collapsed blocked sewer pipelines made safe within 1 hour	1	%	95%	90%	84%	90%	95%	**98%**
3	**Water Demand Management**								
3.1	Bulk water supply								
	Target (Low water demand curve, 20% reduction on unrestricted growth by 2020)		Gl/a	*343*	*347*	**315**	**321**	**328**	20% < Unrestricted
	Actual		Gl/a	**294**	**287**	**301**	313		
3.1.1	No. of consumers (based on 2001 Census and growth rate of 2,60%)		Cap	**2,832,055**	**2,905,689**	**2,981,237**	**3,058,749**	**3,138,497**	NA
3.1.2	Gross per capita consumption	2	l/cap/d	**284.4**	**270.6**	**276.6**	*280.0*	*260.0*	***216***
3.2	UAW (Reticulation)	1	%	**21%**	**18%**	**17%**	*17%*	*16%*	**15%**
3.3	Effluent recycled in Summer	1, 5	%	**10%**	**10%**	***10%***	***10%***	**11%**	**40%**
4	**Water Quality Samples Complying With Standards**								
4.1	Potable water (%compliance with standards)	3	%						
4.2	Effluent (COD, Ammonia, Suspended solids, E-coli) (% compliance with standards)	4	%	**56%**	**71%**	**71%**	*73%*	*67%*	**90%**
4.3	Rivers (Ecoli, 50th % ile compliance with standards)	6	%			**44%**	40%		**60%**
4.4	Vleis (Ecoli, 50th % ile compliance with standards)	6	%			**82%**	83%		**90%**
4.5	Coastal, Atlantic Coast (Ecoli, 80th % ile compliance with standards)		%	**75%**	**68%**	**89%**	*82%*	*89%*	**90%**
4.6	Coastal, False Bay (Ecoli, 80th % ile compliance with standards)		%	**93%**	**85%**	**98%**	*93%*	*94%*	**95%**
5	**Billing and Credit Control**								
5.1	Payment	1	%	**90%**	**92%**	**89%**	*95*	*93*	*95*
6	**Asset Maintenance**								
6.1	Water Pipelines Replaced	1	%	0.30%	0.25%	0.20%	0.20%	0.20%	**2.00%**
6.2	No. of water pipeline bursts per 100km per annum	1	no.	30	30	32	35	40	**20**
6.3	Sewer pipelines replaced	1	%	0.10%	0.10%	0.10%	0.10%	0.10%	**2.00%**
6.4	No. of sewer collapses per 100km per annum	1	no.	30	30	30	35	40	**20**
7	**Financial KPIs**								
7.1	Cost of bulk water		R/kl	1.31	1.38	1.47	1.63	*1.81*	NA
7.2	Cost of potable water (Reticulation) - average historic cost		R/kl	**2.68**	**2.95**	**3.09**	*3.49*	*3.84*	NA
7.3	Cost of effluent conveyance (Reticulation) - average historic cost		R/kl	0.76	0.84	0.93	1.12	1.19	NA
7.4	Cost of bulk wastewater treated - average historic cost		R/kl	**1.04**	*1.18*	*1.32*	*1.50*	*1.59*	NA

NOTES: NA = Target not applicable, 1=Not available yet, estimated. SAP and systems being bedded down to identify this. 2= Gross consumption includes all water produced and all customer categories including industrial. 3= Not available – Methodology re SABS 241 under review. 4=Arithmetic mean of 4 flow-weighted % values. 5=Targets are tentative, pending analysis of historic trend.